



# Wind-Storage Enhanced Technologies on the Grid

PIER Staff Workshop
October 3, 2007
California Energy Commission





## Agenda

- Introductions
- Background on PIER Wind & Storage Programs – Motivation
- Renewables & Storage from the Utilities Perspective
- Discussion Session
- Q&A
- Adjourn







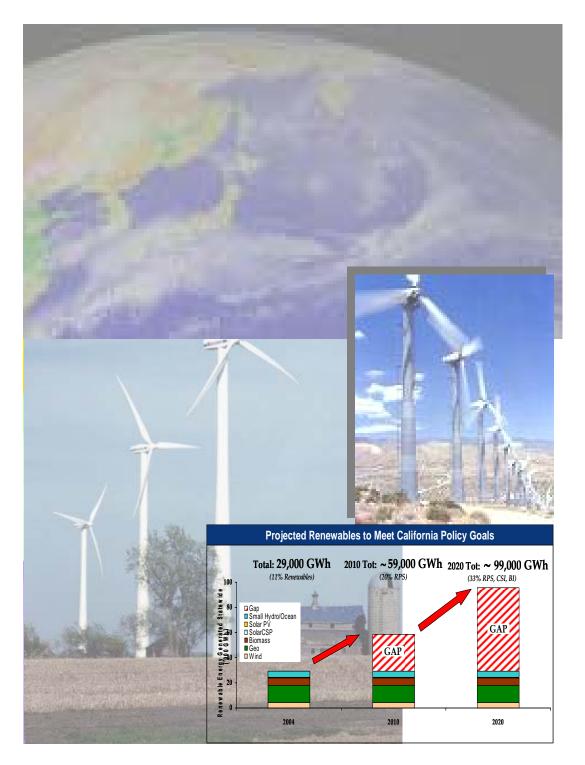
- Meet RPS
- Integrate renewables in a sustainable and reliable manner
- Improve transmission and distribution (T&D) reliability, managing intermittency, addressing power quality and adding to resource availability



# Objective



- Information and ideas exchange workshop
- Obtain industry input on current activities and interest using energy storage systems, as well as ways to use storage to better accommodate wind energy generating resources.





### **Drivers**

- Policies
- Regulatory/Environment
- Market/Economics
- Aging Infrastructure
- Others



#### **Discussion Questions**



- 1. What are the steps necessary to put to practice? Steps might include studies, interconnection concepts and demonstration projects.
- 2. What technologies are available and what is the best approach to feasibly couple storage to accommodate wind generating resources on the grid?
- 3. What methods and locations would benefit comanaged wind and storage for the benefit of the grid?
- 4. What are the market, regulatory, business/corporate, contractual barriers and uncertainties?
- 5. What wind-storage enhancements are needed to establish public confidence in these practices to enable a cleaner, more reliable, diverse and economically sustainable energy future?
- 6. What additional data is needed to manage and optimize economic operation for the system?
- 7. How to quantify value of wind and storage enhancements to the grid?